Last DSM Algorithm
2006 Pedestal Version

16th March 2005

Input Bits

Input Channel	Bit Description
0	Unused
1	VTX Information Bit 0 – BBC TAC difference in window Bit 1 – Unused Bit 2 – BBC East small-tile ADC sum over threshold 0 Bit 3 – BBC West small-tile ADC sum over threshold 0 Bits 4:15 – Unused
2	Unused
3	Unused
4	Miscellaneous Information Bit 0 – Blue bunch filled Bit 1 – Yellow bunch filled Bits 2:15 - Unused
5	Unused
6	Special Trigger Requests Bits 0:6 – Special trigger requests Bits 7:12 - Unused Bit 14 – Zero-bias bit Bit 15 – Random bit
7	Unused

Registers

None

Output Bits

Bit	Description
Bits 0:15	
0:2	3-bit Special Trigger request, set to “000” if there is no request
3:6	4-bit number encoding which of 16 detectors is making the request
7:12	Unused
13	Minimum bias trigger
14	Zero bias trigger
15	Random trigger
Bits 16:31	Same definitions as bits 0:15

Internal Logic

- The minimum bias trigger bit is set when the following condition is met:
  BBC East small-tile ADC sum over threshold 0 AND
  BBC West small-tile ADC sum over threshold 0 AND
  BBC TAC difference in window AND
  Blue bunch filled AND
  Yellow bunch filled

The BBC components of the minimum bias definition are based on thresholds applied earlier in the DSM tree. If the user wants to remove one of these components then this can be achieved by setting those thresholds to their lowest and/or highest values (whichever is appropriate). However, there is no way in software to remove the blue and yellow component.

This algorithm is designed to be used in the pedestal Tier1 files. Since pedestals have not been subtracted from the BBC ADC values they will be larger than usual which means the minimum bias condition will be more likely to be met.